

AMENDMENTS TO THE CLAIMS:

This listing of claims will replace all prior versions and listings of claims in the application:

1. (Previously Presented) An image generating device for generating images capturing a movable body moving within a virtual three-dimensional space from a viewpoint of a camera in said virtual three-dimensional space, comprising:

movement means for controlling the movement of said camera viewpoint based on a position relationship between an observable point in relation to said movable body and a line of sight of a current camera viewpoint; and

artificial intelligence (AI) processing means for executing AI processing at least one of incorporating emotions of the movable body that influence and are influenced by circumstances, evaluation/determination, and factors of behaviors in said virtual three-dimensional space, wherein the AI processing determines an action which is independently associated with the movable body and calculates emotional factors based on the circumstances of said virtual three-dimensional space, wherein the emotional factors control behavior of the movable body.

2. (Previously Presented) An image generating device according to claim 1, wherein said virtual three-dimensional space is a game space, and said movable body is an enemy in a gun shooting game within said game space.

3. (Previously Presented) An image generating device according to claim 2, further comprising:

display means for displaying said game space on a screen;

a gun unit capable of producing signals on said screen when a player manipulates a trigger;

a sensor for detecting an arrival position of said signals on the screen of said display means; and

game implementing means for implementing a gun shooting game between said enemy and said player based on said arrival position.

4. (Previously Presented) An image generating device according to claim 3, further comprising:

observable point moving means for moving said observable point toward said movable body for each display of one frame of said image, wherein a position of said observable point is at a different position than that of said movable body.

5. (Previously Presented) An image generating device according to claim 4, wherein said observable point moving means comprises:

means for moving said observable point toward said movable body in prescribed distances, for each display of one frame of said image, along a straight line connecting said observable point and said movable object.

6. (Previously Presented) An image generating device according to claim 4, wherein said observable point moving means comprises:

means for operating an open angle between a current line of sight of said camera and a line extending from the camera position through said observable point;

means for operating a rotational angle based on the open angle; and

means for rotating, for each display of one frame of said image, the current line of sight of said camera viewpoint toward said observable point by said rotational angle.

7. (Previously Presented) An image generating device according to claim 3, wherein said movement means comprises:

judging means for judging the occurrence of specific circumstances of the relative position relationship between said camera viewpoint, which changes in accordance with manipulations of said player, and said observable point; and

viewpoint movement control means for controlling the position of said camera viewpoint to continuously capture the position of said observable point.

8. (Previously Presented) An image generating device according to claim 7, wherein said viewpoint movement control means comprises:

means for moving said camera; and

means for rotating said camera viewpoint based on an angle between a line extending from said camera position through said observable point after movement of said camera and a line extending from said camera position through said observable point before movement of said camera.

9. (Previously Presented) An image generating device according to claim 8, wherein means for rotating said camera viewpoint rotates said camera viewpoint toward said observable point based on said angle.

10. (Original) An image generating device according to claim 9, wherein said viewpoint rotation means is means for rotating said camera viewpoint toward said observable point side based on an angle in which said angle is increased/decreased a prescribed value.

11. (Previously Presented) An image generating device according to claim 9, further comprising:

avoidance manipulation means for said player to manipulate a character, which is a simulation of said player on a screen, to avoid a bullet fired from said enemy, wherein said judging means determines whether said avoidance manipulation means is in a manipulative state.

12. (Canceled)

13. (Previously Presented) An image generating device for generating images allowing a player to play a gun shooting game with an enemy character existing in a virtual game space, comprising:

image processing means for providing images suggesting to the player in advance an impending attack by said enemy character on said player, wherein the images include at least one image of at least one bullet fired by said enemy character and having a path toward said player in the virtual game space, and further wherein the path of the at least one bullet deviates from the position of the player until a predetermined condition is met.

14. (Previously Presented) An image generating device according to claim 13, wherein the image of said at least one bullet is an image of the at least one bullet flying in an arc.

15. (Previously Presented) An image generating device for displaying on a display images for a player to play a gun shooting game with an enemy character existing in a virtual game space, said image generating device comprising:

artificial intelligence (AI) processing means for executing AI processing incorporating emotions of said enemy character that influence and are influenced by at least one of circumstances, evaluation/determination, and factors of behaviors in said game, wherein the AI processing determines an action which is independently associated with the enemy character and calculates emotional factors based on the circumstances of said game, wherein the emotional factors control behavior of the enemy character.

16. (Previously Presented) An image generating device for displaying on a display images for a player to play a gun shooting game with an enemy character existing in a virtual game space, said image generating device comprising:

artificial intelligence (AI) processing means for executing AI processing incorporating emotions of said enemy character influenced by at least one of circumstances, evaluation/determination, and factors of behaviors in said game, wherein the AI processing determines an action which is independently associated with the enemy character,

wherein said factors of emotions are represented by emotional elements of fear and anger in relation to said game.

17. (Original) An image generating device according to claim 16, wherein said AI processing means includes means for performing processing to reflect the results of behavior based on said factors of behaviors to said factors of emotions.

18. (Previously Presented) An image generating device for generating images by representing a movable object simulating a person and moving inside a virtual three-dimensional space as a plurality of parts connected via connection points, said image generating device comprising:

first specifying means for specifying a subpart on a terminal side and a main part on a central side with respect to two adjacent parts among said plurality of parts;

first operating means for operating an impulse of the subpart motion communicated to the main part under a presumption that the connection point of said subpart to said main part is a fixed point;

first repeating means for repeating, in a recurring manner, the movements of said first specifying means and said first operating means from the terminal side of said movable object to the central side thereof;

second specifying means for specifying a main part on the central side and a subpart on the terminal side with respect to two adjacent parts among said plurality of parts;

second operating means for operating an impulse of the main part motion communicated to the subpart;

second repeating means for repeating, in a recurring manner, the movements of said second specifying means and said second operating means from the central side of said movable object to the terminal side thereof; and

artificial intelligence (AI) processing means for executing AI processing incorporating emotions of the movable object that influence and are influenced by at least one of circumstances, evaluation/determination, and factors of behaviors in said virtual three-dimensional space, wherein the AI processing determines an action which is independently associated with the movable object and calculates emotional factors based on the circumstances of said virtual three-dimensional space, wherein the emotional factors control behavior of the movable object.

19. (Previously Presented) An image generating device for generating images by representing a movable object simulating a person and moving inside a virtual three-dimensional space as a plurality of parts connected via connection points, said image generating device comprising:

first specifying means for specifying a subpart on a terminal side and a main part on a central side with respect to two adjacent parts among said plurality of parts;

first operating means for operating an impulse of the subpart motion communicated to the main part under a presumption that the connection point of said subpart to said main part is a fixed point;

first repeating means for repeating, in a recurring manner, the movements of said first specifying means and said first operating means from the terminal side of said movable object to the central side thereof;

second specifying means for specifying a main part on the central side and a subpart on the terminal side with respect to two adjacent parts among said plurality of parts;

second operating means for operating an impulse of the main part motion communicated to the subpart; and

second repeating means for repeating, in a recurring manner, the movements of said second specifying means and said second operating means from the central side of said movable object to the terminal side thereof,

wherein at least one of said first and second operating means comprises means for executing seasoning-like operational processing upon simulating said person.

20. (Previously Presented) An image generating device according to claim 19, wherein said seasoning-like operational processing includes at least one of the operations among:

an operation for applying a reverse moment to at least one part of the plurality of parts, which is caused pursuant to at least one restriction on movement of at least one joint of said person,

an operation for reflecting an external force inflicted on said person to at least one part of the plurality of parts,

an operation for correcting an unnaturalness of a position of at least one part of the plurality of parts caused pursuant to differences in calculations,

an operation for applying an internal force moment caused by at least one physical characteristic of said person to at least one part of the plurality of parts, and

an operation for controlling a rotation or movement speed of at least one part of the plurality of parts for reflecting expressions caused by a mentality of said person to said at least one part of the plurality of parts.

21. (Previously Presented) An image generating device for generating image data which interpolates motion between two types of motions of a movable object moving within a virtual three-dimensional space, comprising:

operating means for discretely operating a function curve of the motion between said two types of motions pursuant to a current rotational angle, target rotational angle, and a number of frames required to reach the target rotational angle;

interpolation means for performing motion interpolation based on the operational results of said operating means; and

artificial intelligence (AI) processing means for executing AI processing incorporating emotions of the movable object that influence and are influenced by at least one of circumstances, evaluation/determination, and factors of behaviors in said virtual three-dimensional space, wherein the AI processing determines an action which is independently associated with the movable object and calculates emotional factors based on the circumstances of said virtual three-dimensional space, wherein emotional factors control behavior of the movable object.

22. (Previously Presented) An image generating device for generating images requiring a collision judgment between a movable object moving within a virtual three-dimensional space and a structural object arranged in said space, comprising:

a collision judgment means for judging the collision with said movable object while moving said structural object, wherein a coordinate, being fixed on a collision surface of the structural object while moving, is described in a coordinate system associated with the structural object, and based on said coordinate, the collision is determined; and

artificial intelligence (AI) processing means for executing AI processing incorporating emotions of the movable object that influence and are influenced by at least one of circumstances, evaluation/determination, and factors of behaviors in said virtual three-dimensional space, wherein the AI processing determines an action which is independently associated with the movable object and calculates emotional factors

based on the circumstances of said virtual three-dimensional space, wherein emotional factors control behavior of the movable object.

23. (Original) An image generating device according to claim 22, wherein said collision judgment means is means for judging the collision while moving said structural object in either parallel movement or rotational movement.

24. (Previously Presented) A storage medium storing a program for executing functions of at least one of the movement means, display means, game implementing means, observable point moving means, and avoidance manipulation means of the image generating device of any one of claims 1-11.

25. (Previously Presented) A storage medium storing a program for executing functions of the image processing means of the image generating device of any one of claims 13-14.

26. (Previously Presented) A storage medium storing a program for executing functions of the AI processing means of the image generating device of any one of claims 15-17.

27. (Previously Presented) A storage medium storing a program for executing functions of the first specifying means, first operating means, first repeating

means, second specifying means, second operating means and second repeating means of the image generating device of any one of claims 18-20.

28. (Previously Presented) A storage medium storing a program for executing functions of the operating means and interpolation means of the image generating device of claim 21.

29. (Previously Presented) A storage medium storing a program for executing functions of the collision judgment means of the image generating device of claim 22 or claim 23.

30. (Previously Presented) A method of moving a viewpoint of a camera on a game display such that an observable body is optimally displayed on the game display, comprising:

- determining a current position of the observable body;
- determining a current position of a target point, wherein the target point is on a first line extending from a position of the camera and through the target point;
- moving the target point a prescribed distance toward the observable body;
- calculating an angle between the first line and a line of sight of the camera;
- rotating the line of sight of the camera toward the first line based on the angle computed; and
- executing AI processing incorporating emotions of the observable body that influence and are influenced by at least one of circumstances, evaluation/determination,

and factors of behaviors in said virtual three-dimensional space, wherein the AI processing includes determining an action which is independently associated with the observable body and calculates emotional factors based on the circumstances of said virtual three-dimensional space, wherein the emotional factors control behavior of the observable body.

31. (Previously Presented) A method of moving a viewpoint of a camera on a game display such that an observable body is optimally displayed on the game display, comprising:

- determining a first direction from a first position of the camera to a target point;
- moving the camera from the first position to a second position;
- determining a second direction from the second position of the camera to the target point;
- computing an angle between the first direction and the second direction;
- rotating a line of sight of the camera based on the angle computed; and
- executing AI processing incorporating emotions of the observable body that influence and are influenced by at least one of circumstances, evaluation/determination, and factors of behaviors in said virtual three-dimensional space, wherein the AI processing includes determining an action which is independently associated with the observable body and calculates emotional factors based on the circumstances of said virtual three-dimensional space, wherein the emotional factors control behavior of the observable body.

32. (Previously Presented) A computer-readable medium on which is stored a set of instructions for moving a viewpoint of a camera on a game display such that an observable body is optimally displayed on the game display, which when executed performs steps comprising:

determining a current position of the observable body;

determining a current position of a target point, wherein the target point is on a first line extending from a position of the camera and through the target point;

moving the target point a prescribed distance toward the observable body;

calculating an angle between the first line and a line of sight of the camera;

rotating the line of sight of the camera toward the first line based on the angle computed; and

executing AI processing incorporating emotions of the observable body that influence and are influenced by at least one of circumstances, evaluation/determination, and factors of behaviors in said virtual three-dimensional space, wherein the AI processing includes determining an action which is independently associated with the observable body and calculates emotional factors based on the circumstances of said virtual three-dimensional space, wherein the emotional factors control behavior of the observable body.

33. (Previously Presented) A computer-readable medium on which is stored a set of instructions for moving a viewpoint of a camera on a game display such that an observable body is optimally displayed on the game display, which when executed performs steps comprising:

determining a first direction from a first position of the camera to a target point;
moving the camera from the first position to a second position;
determining a second direction from the second position of the camera to the target point;
computing an angle between the first direction and the second direction;
rotating a line of sight of the camera based on the angle computed; and
executing AI processing incorporating emotions of the observable body that influence and are influenced by at least one of circumstances, evaluation/determination, and factors of behaviors in said virtual three-dimensional space, wherein the AI processing includes determining an action which is independently associated with the observable body and calculates emotional factors based on the circumstances of said virtual three-dimensional space, wherein the emotional factors control behavior of the observable body.

34. (Previously Presented) A system for moving a viewpoint of a camera on a game display such that an observable body is optimally displayed on the game display, comprising:

means for determining a current position of the observable body;
means for determining a current position of a target point, wherein the target point is on a first line extending from a position of the camera and through the target point;
means for moving the target point a prescribed distance toward the observable body;

means for calculating an angle between the first line and a line of sight of the camera;

means for rotating the line of sight of the camera toward the first line based on the angle computed; and

artificial intelligence (AI) processing means for executing AI processing incorporating emotions of the observable body that influence and are influenced by at least one of circumstances, evaluation/determination, and factors of behaviors in said virtual three-dimensional space, wherein the AI processing determines an action which is independently associated with the observable body and calculates emotional factors based on the circumstances of said virtual three-dimensional space, wherein the emotional factors control behavior of the observable body.

35. (Previously Presented) A system for moving a viewpoint of a camera on a game display such that an observable body is optimally displayed on the game display, comprising:

means for determining a first direction from a first position of the camera to a target point;

means for moving the camera from the first position to a second position;

means for determining a second direction from the second position of the camera to the target point;

means for computing an angle between the first direction and the second direction;

means for rotating a line of sight of the camera based on the angle computed;
and

artificial intelligence (AI) processing means for executing AI processing incorporating emotions of the observable body that influence and are influenced by at least one of circumstances, evaluation/determination, and factors of behaviors in said virtual three-dimensional space, wherein the AI processing determines an action which is independently associated with the observable body and calculates emotional factors based on the circumstances of said virtual three-dimensional space, wherein the emotional factors control behavior of the observable body.

36. (Currently Amended) A method executable by a processor for suggesting to a game player an attack by an enemy, the method comprising:
determining by the processor whether an attack by an enemy has begun or will begin;
computing a bullet path which deviates from a position of the player; and
executing the bullet path until the number of bullets fired in a series by the enemy has reached a predetermined number.

37. (Previously Presented) The method of claim 36, wherein the bullet path is arc-shaped.

38. (Previously Presented) The method of claim 36, wherein the deviation between the bullet path and the position of the player decreases as the number of bullets fired in a series increases.

39. (Currently Amended) A computer-readable medium on which is stored a set of instructions which, when executed by a processor, perform a method for suggesting to a player an attack by an enemy, ~~which when executed performs steps~~ comprising:

determining by the processor whether an attack by an enemy has begun or will begin;

computing a bullet path which deviates from a position of the player; and

executing the bullet path until the number of bullets fired in a series by the enemy has reached a predetermined number.

40. (Previously Presented) The computer-readable medium of claim 39, wherein the bullet path is arc-shaped.

41. (Previously Presented) The computer-readable medium of claim 39, wherein the deviation between the bullet path and the position of the player decreases as the number of bullets fired in a series increases.

42. (Currently Amended) A system for suggesting to a game player an attack by an enemy:

a processor for executing program instructions;

means for determining by the processor whether an attack by an enemy has begun or will begin;

means for computing a bullet path which deviates from a position of the player;
and

means for executing the bullet path until the number of bullets fired in a series by the enemy has reached a predetermined number.

43. (Previously Presented) The system of claim 42, wherein the bullet path is arc-shaped.

44. (Previously Presented) The system of claim 42, wherein the deviation between the bullet path and the position of the player decreases as the number of bullets fired in a series increases.

45. (Currently Amended) A method executable by a processor for controlling at least one character in a game, the method comprising:

determining by the processor an emotion factor of the at least one character based on at least one of a situation or behavior, wherein the emotion factor is determined independently for each character; and

determining by the processor a behavior of the at least one character based on the emotion factor, wherein the behavior is determined independently for each character, such that the behavior can differ between identical sets of situations or

identical factors of behavior and the emotion factor controls the behavior of the at least one character.

46. (Currently Amended) A method executable by a processor for controlling at least one character in a game, the method comprising:

determining by the processor an emotion factor of the at least one character based on at least one of a situation or behavior, wherein the emotion factor is determined independently for each character; and

determining by the processor a behavior of the at least one character based on the emotion factor, wherein the behavior is determined independently for each character,

wherein the emotion factor reflects a degree of anger and fear in the at least one character.

47. (Previously Presented) The method of claim 46, wherein determining an emotion factor of the at least one character comprises:

changing the emotion factor of the at least one character based on at least one of the following situations: a bullet passes near the at least one character, the at least one character is adversely affected; another character is adversely affected; a performance of the at least one character; and a lapse in time.

48. (Previously Presented) The method of claim 47, wherein changing the emotion factor of the at least one character comprises at least one of the following:

increasing fear in the at least one character when a bullet passes near the at least one character;

increasing anger in the at least one character when an opposing character defeats a comrade of the at least one character;

increasing fear in the at least one character when an opposing character defeats a comrade of the at least one character;

increasing anger in the at least one character when the at least one character sustains injury;

decreasing anger and fear in the at least one character when an opposing character sustains injury;

increasing anger rises and decreasing fear in the at least one character when the at least one character is unable to inflict injury on an opposing character; and

decreasing anger and fear in the at least one character as time lapses.

49. (Previously Presented) The method of claim 46, wherein determining a behavior of the at least one character based on the emotion factor comprises at least one of the following:

increasing a hit rate of the at least one character when fear is low;

decreasing the hit rate of the at least one character when fear is high;

increasing a movement rate of the at least one character when anger is high;

inhibiting the at least one character's shooting when fear is high; and

increasing a shoot rate of the at least one character when anger is high.

50. (Currently Amended) A computer-readable medium on which is stored a set of instructions for controlling at least one character in a game, which when executed by a processor performs steps comprising:

determining by the processor an emotion factor of the at least one character based on at least one of a situation and behavior, wherein the emotion factor is determined independently for each character; and

determining a behavior of the at least one character based on the emotion factor, wherein the behavior is determined independently for each character, such that the behavior can differ between identical sets of situations or identical factors of behavior and the emotion factor controls the behavior of the at least one character.

51. (Currently Amended) A computer-readable medium on which is stored a set of instructions which, when executed by a processor, perform a method for controlling at least one character in a game, ~~which when executed performs steps~~ comprising:

determining by the processor an emotion factor of the at least one character based on at least one of a situation and behavior, wherein the emotion factor is determined independently for each character; and

determining a behavior of the at least one character based on the emotion factor, wherein the behavior is determined independently for each character,

wherein the emotion factor reflects a degree of anger and fear in the at least one character.

52. (Previously Presented) The computer-readable medium of claim 51, wherein determining an emotion factor of the at least one character comprises:

changing the emotion factor of the at least one character based on at least one of the following situations: a bullet passes near the at least one character, the at least one character is adversely affected; another character is adversely affected; a performance of the at least one character; and a lapse in time.

53. (Previously Presented) The computer-readable medium of claim 52, wherein changing the emotion factor of the at least one character comprises at least one of the following:

increasing fear in the at least one character when a bullet passes near the at least one character;

increasing anger in the at least one character when an opposing character defeats a comrade of the at least one character;

increasing fear in the at least one character when an opposing character defeats a comrade of the at least one character;

increasing anger in the at least one character when the at least one character sustains injury;

decreasing anger and fear in the at least one character when an opposing character sustains injury;

increasing anger and decreasing fear in the at least one character when the at least one character is unable to inflict injury on an opposing character; and

decreasing anger and fear in the at least one character as time lapses.

54. (Previously Presented) The computer-readable medium of claim 51, wherein determining a behavior of the at least one character based on the emotion factor comprises at least one of the following:

- increasing a hit rate of the at least one character when fear is low;
- decreasing the hit rate of the at least one character when fear is high;
- increasing a movement rate of the at least one character when anger is high;
- inhibiting the at least one character's shooting when fear is high; and
- increasing a shoot rate of the at least one character when anger is high.

55. (Currently Amended) A system for controlling at least one character in a game comprising:

a processor for executing program instructions;

means for determining by the processor an emotion factor of the at least one character based on at least one of a situation and behavior, wherein the emotion factor is determined independently for each character; and

means for determining by the processor a behavior of the at least one character based on the emotion factor, wherein the behavior is determined independently for each character, such that the behavior can differ between identical sets of situations or identical factors of behavior and the emotion factor controls the behavior of the at least one character.

56. (Currently Amended) A system for controlling at least one character in a game comprising:

a processor for executing program instructions;

means for determining by the processor an emotion factor of the at least one character based on at least one of a situation and behavior, wherein the emotion factor is determined independently for each character; and

means for determining by the processor a behavior of the at least one character based on the emotion factor, wherein the behavior is determined independently for each character,

wherein the emotion factor reflects a degree of anger and fear in the at least one character.

57. (Previously Presented) The system of claim 56, wherein means for determining an emotion factor of the at least one character comprises:

means for changing the emotion factor of the at least one character based on at least one of the following situations: a bullet passes near the at least one character, the at least one character is adversely affected; another character is adversely affected; a performance of the at least one character; and a lapse in time.

58. (Previously Presented) The system of claim 57 wherein means for changing the emotion factor of the at least one character comprises at least one of the following:

means for increasing fear in the at least one character when a bullet passes near the at least one character.

means for increasing anger in the at least one character when an opposing character defeats a comrade of the at least one character;

means for increasing fear in the at least one character when an opposing character defeats a comrade of the at least one character;

means for increasing anger in the at least one character when the character sustains injury;

means for decreasing anger and fear in the at least one character when an opposing character sustains injury;

means for increasing anger rises and decreasing fear in the at least one character when the at least one character is unable to inflict injury on an opposing character; and

means for decreasing anger and fear in the at least one character as time lapses.

59. (Previously Presented) The system of claim 56 wherein means for determining the behavior of at least one character based on the emotion factor comprises at least one of the following:

means for increasing a hit rate of the at least one character when fear is low;

means for decreasing the hit rate of the at least one character when fear is high;

means for increasing a movement rate of the at least one character when anger is high;

means for inhibiting the at least one character's shooting when fear is high; and

means for increasing a shoot rate of the at least one character when anger is high.

60. (Currently Amended) A method executable by a processor for controlling at least one character in a game, the method comprising:

determining by the processor an emotion factor of at least one character based on at least one of a situation or behavior and independently for each character, the determining of the emotion factor of the at least one character including:

changing the emotion factor of the at least one character based on at least one of the following situations: a bullet passing near the at least one character, the at least one character being adversely affected; another character being adversely affected; a performance of the at least one character, and a lapse in time, and

determining a change in a behavior of the at least one character based on the emotion factor and independently for each character.

61. (Currently Amended) A computer-readable medium on which is stored a set of instructions which, when executed by a processor, perform a method for controlling at least one character in a game, ~~which when executed performs steps~~ comprising:

determining by the processor an emotion factor of the at least one character based on at least one of a situation or behavior and wherein the emotion factor is determined independently for each character, the determining of the emotion factor of the at least one character including performing steps of

changing the emotion factor of the at least one character based on at least one of the following situations: a bullet passing near the at least one character, the at least one character being adversely affected; another character being adversely affected; a performance of the at least one character; and a lapse in time, and
determining a change in a behavior of the at least one character based on the emotion factor and independently for each character.